

CLAIMS

1 (Twice Amended). A system for protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which is adapted to be repeatedly contacted by in-time-extended contact with a person while the person is working on a work task who is to be protected from electrostatic discharge when in use;

31 a control circuit electrically connected to said contact element, said control circuit including a first resistor element having a resistance which upon initial contact between the person and said contact element will drain some, but not all, electrostatic discharge from said contact element; an inductor element in series with said contact element; and a ground circuit electrically associated with said control circuit.

2 (Previously Amended). The system defined in Claim 1 wherein the first resistor element is physically located closely adjacent to said contact element and is in series with said inductor element.

3 (Cancel). The system defined in Claim 1 wherein said first resistor element is in series with said time-extended contact element and is in series with said inductor element.

4 (Amended). The system defined in Claim 3 2 wherein said control circuit further includes a second resistor element in series with said inductor.

5 (Originally presented). The system defined in Claim 4 wherein said control circuit has the inductor physically located between the first and second resistor elements and the first resistor element is physically located between said contact element and the inductor.

6 (Originally presented). The system defined in Claim 2 wherein said first resistor is located within one foot of said contact element.

7 (Previously Amended). The system defined in Claim 1 wherein said control circuit further includes a second resistor, and said second resistor has a value of at least one megohm and is in series with said inductor element.

8 (Originally presented). The system defined in Claim 1 wherein said control circuit further includes a capacitor in series with said first resistor element.

9 (Originally presented). The system defined in Claim 1 wherein said control circuit further includes a transistor in series with said first resistor element.

10 (Originally presented). The system defined in Claim 1 further including a second electrostatic conducting contact element.

11 (Cancel). The system defined in Claim 1 wherein the time

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extended contact is greater than 100 milliseconds.

12 (Originally presented). The system defined in Claim 1 further including a user contacting element and said electrostatic discharge conducting contact element is located in said user contacting element.

13 (Originally presented). The system defined in Claim 12 wherein said user contacting element includes a computer mouse pad.

14 (Originally presented). The system defined in Claim 1 wherein said first resistor has a value of approximately sixty megohms.

15 (Originally presented). The system defined in Claim 1 wherein said ground circuit includes signal leads.

16 (Originally presented). The system defined in Claim 1 further including a conductor electrically connecting said contact element to said ground circuit, with said resistor being located within one foot of said contact element and further including second resistor in said conductor and located spaced from said first resistor and adjacent to said ground circuit.

17 (Twice Amended). A system for protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which

is ~~adapted to be repeatedly contacted by in time-extended contact~~
~~with a person while the person is carrying out a work task who is~~
~~to be protected from electrostatic discharge when in use;~~

a control circuit electrically connected to said contact
element, said control circuit including a first resistor element
in series with said contact element and being located within one
foot of said contact element; an inductor element separate from
the first resistor element; and

a ground circuit electrically associated with said control
circuit.

18 (Originally presented). The system defined in Claim 17,
wherein said first resistance has a value of approximately five
megohms.

19 (Twice Amended). A system for protecting a person or equipment
from surprise, damaging or uncomfortable electrostatic discharge
(ESD) comprising:

an electrostatic discharge conducting contact element which
is ~~adapted to be repeatedly contacted by in time-extended contact~~
~~with a person while the person is carrying out a work task who is~~
~~to be protected from electrostatic discharge when in use;~~

a control circuit electrically connected to said contact
element, said control circuit including a first resistor element
in series with said contact element and having a resistance in
excess of five megohms;

an inductor element; and

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a ground element electrically connected to said control circuit.

20 (Originally presented). The system defined in Claim 1 further including an electrical plug with said control circuit being located at least partially in said electrical plug.

21 (Originally presented). The system defined in Claim 20 wherein said electrical plug includes a ground prong.

22 (Originally presented). The system defined in Claim 20 further including a test circuit.

23 (Originally presented). The system defined in Claim 20 and wherein said first resistor is physically located closely adjacent to said contact element.

24 (Originally presented). The system defined in Claim 23 and wherein said control circuit further includes an inductor and a second resistor in series with said first resistor.

25 (Originally presented). The system defined in Claim 24 wherein said inductor has an inductance of less than one millihenry.

26 (Originally presented). The system defined in Claim 24 wherein said second resistor has a resistance of one megohm.

27 (Originally presented). The system defined in Claim 20 wherein said plug includes a prong positioned as a hot prong, said prong being non-conductive from said plug.

28 (Originally presented). The system defined in Claim 27 wherein said plug further includes a neutral prong positioned as a neutral prong, said neutral prong being non-conductive from said plug.

29 (Originally presented). The system defined in Claim 20 wherein said plug includes female receptacles.

30 (Originally presented). The system defined in Claim 20 wherein said plug includes an internal resistor having a value of at least one megohm.

31 (Originally presented). The system defined in Claim 20 wherein said plug includes a plurality of grounding connectors.

32 (Originally presented). The system defined in Claim 1 further including a plug adapter with said control circuit being at least partially located in said plug adapter.

33 (Originally presented). The system defined in Claim 32 further including an output lead from said plug.

34 (Twice Amended). A system for protecting a person or equipment

from surprise, ~~damaging~~ or uncomfortable electrostatic discharge (ESD) comprising:

a headphone device;

an electrostatic discharge conducting contact element which is located in said headphone device ~~to be in time extended contact with a person who is using said headphone device and who is to be protected from electrostatic discharge when using said headphone device;~~

a control circuit electrically connected to said contact element, said control circuit including a first resistor element in series with said contact element ~~and having a resistance which will upon initial contact between the user and said contact element drain some, but not all, ESD from said contact element~~ and an inductor element in series with the resistor; and

a ground circuit electrically associated with said control circuit.

35 (Originally presented). The system defined in Claim 34 wherein said headphone device includes two electrical conductors.

36 (Originally presented). The system defined in Claim 35 including a resistor connected to each conductor.

37 (Originally presented). The system defined in Claim 34 further including a jack on said headphone device to which said control circuit is releasably connected.

38 (Originally presented). The system defined in Claim 34 wherein said headset includes an ear pad and said first resistor is part of said ear pad.

39 (Originally presented). The system defined in Claim 34 wherein said headphone device includes a conductive headset pad.

40 (Originally presented). The system defined in Claim 39 wherein said conductive headset pad has a resistance of at least 0.025 megohms.

41 (Originally presented). The system defined in Claim 34 wherein said control circuit is connected to an ear pad on said headphone device.

42 (Twice Amended). A system for protecting a person or equipment from surprise, damaging or painful electrostatic discharge (ESD) comprising:

a user contacting device having a plurality of user ~~contacting~~ locations thereon, said user contacting device being adapted to be contacted repeatedly while a user works on a work task;

an electrostatic discharge conducting contact element at each user ~~contacting~~ location of the plurality of user ~~contacting~~ locations ~~and which contact a user in a time-extended manner when in use;~~

a control circuit electrically connected to each of said

contact elements and including a first resistor having a ~~resistance that is sized to upon initial contact between the user and said contact element drain some, but not all, electrostatic charge from said contact element~~ and an inductor element; and a ground circuit electrically associated with said control circuit.

43 (Amended). The system defined in Claim 42 wherein the user ~~contacting~~ locations of said user contacting device are electrically ~~insulated~~ isolated from each other.

44 (Amended). The system defined in Claim 43 wherein the user ~~contacting~~ locations include a plurality of shapes.

45 (Originally presented). The system defined in Claim 42 wherein said control circuit further includes a capacitor.

46 (Originally presented). The system defined in Claim 42, wherein each of said first resistors has a resistance of approximately five megohms.

47 (Twice Amended). A system for protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

a computer accessory such as a computer keyboard, or a computer mouse;

an electrostatic discharge conducting contact element which

is located in said computer mouse accessory to be in ~~time-~~
~~extended~~ contact with a person who is using said computer mouse
accessory and who is to be protected from electrostatic discharge
when using said computer mouse, said computer accessory being
adapted to be contacted repeatedly while the person works on a
work task;

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a control circuit electrically connected to said contact
element, said control circuit including a first resistor element
~~having a resistance which will upon initial contact between the~~
~~user and said contact element drain some, but not all,~~
~~electrostatic charge from said contact element and an inductor~~
element; and

a ground circuit electrically associated with said control
circuit.

48 (Twice Amended). A system for protecting a person or equipment
from surprise, damaging or uncomfortable electrostatic discharge
(ESD) comprising:

a computer keyboard, the computer keyboard being adapted to
be contacted repeatedly by a person while the person works on a
work task;

an electrostatic discharge conducting contact element which
is located in said computer keyboard to be in ~~time-extended~~
contact with a person who is using said computer keyboard and who
is to be protected from electrostatic discharge when using said
computer keyboard;

a control circuit electrically connected to said contact

element, said control circuit including a first resistor element having a resistance ~~which will upon initial contact between the user and said contact element drain some, but not all, electrostatic charge from said contact element,~~ and an inductor element in series with the resistor element; and

a ground circuit electrically associated with said control circuit.

49 (Originally presented). The system defined in Claim 48 wherein said user contacting element includes a computer keyboard and said contact element is located in a key on said computer keyboard.

50 (Originally presented, allowed). A system for protecting a person from surprise or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which is in time-extended contact with a person who is to be protected from electrostatic discharge when in use;
a ground circuit; and

a Litz wire electrically connecting said contact element to said ground circuit.

51 (Originally presented, Allowed). The system defined in Claim 50 further including a resistor in series between said Litz wire and said ground circuit.

52 (Originally presented). The system defined in Claim 1 wherein said first resistor element is in series with said contact element.

53 (Originally presented). The system defined in Claim 1 further including a second resistor element, with said first resistor element being located closer to said contact element than said second resistor and said second resistor being located closer to said ground circuit than said first resistor.

54 (Twice Amended). A system for protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

an electrostatic discharge conducting contact element which is adapted to be contacted repeatedly by a person while the person is working on a work task ~~in time-extended contact with a person who is to be protected from electrostatic discharge when in use;~~

a ground circuit;

a conductor connecting said contact element to said ground circuit;

a first resistor element in said conductor near said ground circuit, said first resistor element being sized to prevent AC shock from moving from said ground circuit past said first resistor and through said conductor toward said contact element;

a second resistor element in said conductor nearer to said contact element than said first resistor to reduce initial contact shock, ~~said first and having a resistance which upon~~

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~~initial contact between the person and said contact element will drain some, but not all, electrostatic charge from said contact element by limiting the available current flow to the contact means; and~~

an inductor element electrically connected in series to said first resistor element.

55 (Originally presented). The system defined in Claim 20 wherein said plug includes a plurality of internal resistors.

56 (Previously Amended). The system defined in Claim 48 further including an inductor element in series with said contact element.

57 (Previously Amended). The system defined in Claim 47 further including an inductor element in series with said contact element.

58 (Previously Amended). The system defined in Claim 42 further including an inductor element in series with each contact element.

59 (Twice Amended). A method of protecting a person or equipment from surprise or uncomfortable electrostatic discharge (ESD) comprising:

providing an electrostatic discharge (ESD) conducting contact element;

~~initially contacting the ESD contact element for a time-
extended period of longer than a touch repeatedly contacting the
conducting contact element while working on a work task;
draining some, but not all, electrostatic charge during the
initial contact; and~~

reducing radio frequency interference associated with a
build-up portion of said draining step.

60 (originally presented). The method defined in Claim 59
including a step of further protecting a person who is initially
contacting the ESD contact element from shock associated with a
grounding error.

61 (Cancel). The method defined in Claim 60 wherein the time-
extended period exceeds 100 milliseconds.

62 (Cancel). The method defined in Claim 61 further including
steps of repeatedly touching the ESD contact element.

63 (Amended). The method defined in Claim ~~62~~ 60 wherein the
person has an initial amount of ESD upon initial contact and said
step of repeatedly touching the ESD contact element drains less
than the initial amount of ESD at each touch.

64 (Twice Amended). A system for protecting a person or equipment
from surprise, damaging or uncomfortable electrostatic discharge
(ESD) comprising:

an electrostatic discharge conducting contact element which is adapted to be contacted repeatedly by a person while the person is working on a work task in means for contacting a person who is to be protected from electrostatic discharge when in use in a time-extended manner;

~~means for draining some, but not all, electrostatic charge from the person upon initial contact between that person and said means for contacting a person;~~

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means for reducing a build-up portion of radio frequency interference associated with said means for draining; and means for grounding said means for contacting a person.

65 (Originally presented). The system defined in Claim 64 further including means for protecting said means for contacting a person from effects associated with improper grounding.

66 (Originally presented). The system defined in Claim 65 further including a plurality of means for contacting a person.

67 (Amended). A method of protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

providing an electrostatic discharge (ESD) conducting contact element;

~~initially~~ repeatedly contacting the ESD conducting contact element; and

preventing current from the ESD conducting contact element

from instantaneously building up during each contact of the
conducting contact element.

68 (Amended). A system for protecting a person or equipment from
surprise, damaging or uncomfortable electrostatic discharge (ESD)
comprising:

an electrostatic discharge conducting contact element which
is adapted to be contacted repeatedly by a person while the
person works on a work task ~~in means for contacting a person who~~
~~is to be protected from electrostatic discharge when in use in a~~
~~time-extended manner;~~

means for preventing current from said electrostatic
discharge conducting contact element from instantaneously
building up during each contact of said electrostatic discharge
conducting contact element; and

means for grounding said electrostatic discharge conducting
contact element ~~means for contacting a person.~~

69 (Amended). A method of protecting a person or equipment from
surprise, damaging or uncomfortable electrostatic discharge (ESD)
comprising:

providing an electrostatic discharge conducting contact
element;

repeatedly ~~initially~~ contacting the electrostatic discharge
conducting contact element; and

limiting the development and build-up of high impulse
leading edges of current flowing from the electrostatic discharge

conducting contact element during each contact of the
electrostatic discharge conducting contact element.

70 (Amended). A system for protecting a person or equipment from
surprise, damaging or uncomfortable electrostatic discharge (ESD)
comprising:

an electrostatic discharge (ESD) conducting contact element
which is adapted to be repeatedly contacted by a person while the
person works on a work task; and

an inductor element in series with said electrostatic
discharge conducting contact element.

71 (Previously added). The system defined in Claim 70 wherein
said inductor element has an inductance in the range of 1 to 2
millihenry.

72 (Previously added). The system defined in Claim 70 wherein
said inductor element is in a ground path between said
electrostatic discharge (ESD) conducting contact element and
ground.

73 (Previously added). The system defined in Claim 1 wherein said
inductor element is physically spaced apart from the first
resistor element in said control circuit.

74 (Previously added). The system defined in Claim 70 further
including a resistor element which is physically spaced apart

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from said inductor element.

75 (Previously added). The system defined in Claim 70 further including an electrical plug with said inductor element being located in said electrical plug.

76 (Previously added). The system defined in Claim 75 further including a resistor element in said electrical plug.

77 (Previously added). The system defined in Claim 76 wherein said resistor element is at least one megohm.

78 (Previously added). The system defined in Claim 77 wherein said resistor element is physically separate from said inductor element.

79 (Previously added). The system defined in Claim 70 wherein said inductor element is in a discharge path connected to said electrostatic discharge (ESD) conducting contact element.

80 (Newly added). A system for protecting a person or equipment from surprise, damaging or uncomfortable electrostatic discharge (ESD) comprising:

a discharge path;

an electrostatic discharge (ESD) conducting contact element which is adapted to be repeatedly contacted by a person while the person works on a work task; and

an inductor element which is a series element in said
discharge path.

81 (Newly added). The system defined in Claim 70 further
including a plug.

82. (Newly added). The system defined in Claim 1 further
including a plug.
